

Claims

- 5 1. Force assistance module (10) for providing a load-dependent assistance force, in particular for a lowerable overhead luggage compartment in an aircraft, comprising
- a housing (18),
 - a spring system for generating the assistance force, of which spring system one end is coupled pivotally about an axis (Z) in the housing (18) and the other, opposite end defines a
 - 10 force application point (P),
 - a force-transmitting device fastened to or in the vicinity of the force application point (P) for transmitting assistance force to a location remote from the force assistance module,
 - a support (36), which is mounted rotatably in the housing (18) and on which a path (40) is provided, along which the force application point (P) is displaceable back and forth between
 - 15 a first end point (A) and a second end point (B), and
 - an adjusting device (52), which interacts with the support (36) and a load sensor and which as a function of the load detected by the load sensor rotates the support (36) in order to vary the angle between the force application direction of the assistance force at the force application point (P) and the force-transmitting device and hence adapt the value of the
 - 20 assistance force acting upon the force-transmitting device to the detected load.
2. Force assistance module according to claim 1, characterized in that the spring system is a pneumatic pressure spring (26).
- 25 3. Force assistance module according to claim 1 or 2, characterized in that a slide (28) is connected to the force-releasing end of the spring system, to which the force-transmitting device is fastened, and that the slide (28) is displaceable back and forth along the path (40).
- 30 4. Force assistance module according to claim 3, characterized in that the slide (28) rolls along the path (40).
5. Force assistance module according to one of the preceding claims, characterized in that the first end point (A) corresponds to an open position and the second
- 35 end point (B) corresponds to a closed position.
6. Force assistance module according to claim 5, characterized in that a rotating of the support (36) by means of the adjusting device (52) is

effected only when the force application point (P) is situated at the first end point (A).

7. Force assistance module according to claim 6,
characterized in that the force application point (P) and the first end point (A) lie on the axis
5 of rotation (W) of the support (36).

8. Force assistance module according to one of the preceding claims,
characterized in that the path (40) is part of a circular path.

9. Force assistance module according to one of claims 1 to 7,
characterized in that the shape of the path (40) alters as a function of the rotating of the
support (36).

10. Force assistance module according to claim 9,
15 characterized in that the path (40) comprises a plurality of sections connected in an articulated manner to one another, and that a control plate (38), which is displaceable relative to the support (36) and connected to the sections, varies the position of the individual sections relative to one another as a function of the rotating of the support (36).

11. Force assistance module according to claim 10,
20 characterized in that the control plate (38) is guided in a restricted manner on the support (36).

12. Force assistance module according to claim 10 or 11,
25 characterized in that the control plate (38) forms a section of the path (40).

13. Force assistance module according to one of claims 9 to 12,
characterized in that the shape of the path (40), given no load or low load, is the shape of a
sector of an annulus and, with increasing load, becomes progressively more rectilinear.

14. Force assistance module according to one of the preceding claims,
30 characterized in that the adjusting device (52) comprises a spindle drive, which through rotation of its spindle (56) rotates the support (36) back and forth.

15. Force assistance module according to claim 14,
35 characterized in that the spindle (56) is set in rotation by an electric motor (54).

16. Force assistance module according to claim 15,
characterized in that the electric motor (54) is a stepping motor.

17. Force assistance module according to one of the preceding claims,
5 characterized in that the force-transmitting device is a cable (14).

18. Force assistance module according to one of the preceding claims,
characterized in that the value of the assistance force acting upon the force-transmitting
device remains constant during a displacement of the force application point (P) between the
10 first end point (A) and the second end point (B).

19. Force assistance module according to one of claims 1 to 18,
characterized in that the value of the assistance force acting upon the force-transmitting
device increases during a displacement of the force application point (P) from the first end
15 point (A) to the second end point (B).

20. Force assistance module according to claim 19,
characterized in that shortly before attainment of the second end point (B) the value of the
assistance force acting upon the force-transmitting device corresponds to or slightly exceeds
20 the detected load.

21. Force assistance module according to one of the preceding claims,
characterized in that the housing (18) comprises two cover plates(20, 22), which are held at
a distance from one another and between which the spring system, the rotatable support
25 (36) and the adjusting device (52) are disposed.